AMENDMENTS TO THE CLAIMS

The below listing of claims replaces all prior versions of claims in the application.

Listing of Claims:

1. (Currently Amended) A real-time picture information compression-transmission apparatus for compression transmitting picture information in a real-time manner, comprising:

input means for receiving said picture information;

an encoder encoding frames of said picture information from the input means on a preset cycle in a real-time manner and outputting real-time-encoded data corresponding to respective frames of said picture information;

storage means for storing said real-time-encoded data corresponding to the respective frames of said picture information output from the encoder, the encoder writing the real-time-encoded data corresponding to the respective frames into the storage means;

division means for receiving the real-time encoded data corresponding to respective frames from the storage means and sequentially dividing said real-time-encoded data corresponding to the respective frames into packets; and

transmission timing control and transmission means for controlling transmission timing to sequentially transmit the packets corresponding to the respective frames to a network, wherein packets corresponding to respective frames are transmitted sequentially to the network during a period ~~after~~ between when said encoder ~~writes~~ ends writing real-time encoded data corresponding to a frame to the storage means and ~~before~~ when said encoder ~~writes~~ begins

writing real-time encoded data corresponding to a next frame to the storage means, and for

transmitting the packets to the network according to a connection-less type protocol.

2. (Previously Presented) A real-time picture information compression-transmission

apparatus according to claim 1, wherein

the division means for dividing the data corresponding to respective frames into the

packets, divides said real-time-encoded data corresponding to respective frames into packets in

size suited for an Ethernet maximum transfer unit; and

the transmission timing for the transmitting the packets corresponding to respective

frames to the network is determined from an encoded frame interval and a frame data storage

time.

3. (Previously Presented) A real-time picture information compression-transmission

apparatus according to claim 1, wherein

the division means for dividing the real-time-encoded data corresponding to respective

frames into the packets divides the respective frames so that:

a payload size of a transmitted UDP packet corresponds to a value obtained by

subtracting an IP header size and a UDP header size from an Ethernet maximum transfer unit;

and

the number of UDP packets divided from a K-th frame corresponds to a value obtained by dividing a data size, in bytes, of the K-th frame by the payload size, in bytes, of the transmitted UDP packet; and

the transmission timing, controlled by said transmission timing control and transmission means, for transmitting the packets to the network is set so that a transmission time, in seconds, for transmitting the K-th frame data to the network corresponds to a value obtained by subtracting a write time, in seconds, for which said encoder writes the K-th frame data into said storage means, from a frame interval, in seconds, between the K-th frame data and a (K + 1)th frame data.

4. (Withdrawn) A real-time picture information compression-transmission apparatus according to claim 1, wherein

if multi-channel transmission is conducted, the transmitted packets are further filtered using one of UDP port numbers and IP multi-cast addresses, whereby even if a network band in which the packets are being transmitted is narrowed, filtered picture information can be transmitted.

5. (Withdrawn) A real-time picture information compression-transmission apparatus according to claim 2, wherein

if multi-channel transmission is conducted, the transmitted packets are further filtered using one of UDP port numbers and IP multi-cast addresses, whereby even if a network band in

which the packets are being transmitted is narrowed, filtered picture information can be transmitted.

6. (Withdrawn) A real-time picture information compression-transmission apparatus according to claim 3, wherein

if multi-channel transmission is conducted, the transmitted packets are further filtered using one of UDP port numbers and IP multi-cast addresses, whereby even if a network band in which the packets are being transmitted is narrowed, filtered picture information can be transmitted.

7.-13. (Cancelled)

14. (Currently Amended) A real-time picture information compression-transmission method for compression-transmitting picture information in a real-time manner, comprising:

an encoding step of encoding said picture information on a preset cycle in a real time manner;

a storage step of writing and storing real-time-encoded frame data on said picture information for each frame;

a division step of sequentially dividing said real-time-encoded data into packets for each frame; and

a transmission timing control and transmission step of controlling transmission timing to sequentially transmit the divided packets to a network ~~after a write time for storing said frame data for the packets and before a time for storing next frame data~~ during a period between when said storage step of writing and storing real-time encoded data for a frame ends and when said storage step of writing and storing real-time encoded data for a next frame begins, and of transmitting the packets to the network according to a connection-less type protocol.

15. (Withdrawn) A real-time picture information compression-transmission method for compression-transmitting live picture information in a real time manner, comprising:

an encoding step of encoding said live picture information on a preset cycle in a real time manner;

a storage step of writing and storing real-time-encoded frame data on said picture information for each frame;

a division step of sequentially dividing said real-time-encoded frame data into packets for each frame;

a transmission timing control and transmission step of controlling transmission timing to sequentially transmit the divided packets to a network after a write time for storing said frame data for the packets and before a time for storing next frame data, and of transmitting the packets to the network according to a connection-less type protocol;

a packet loss detection step of detecting packet loss

of the packets transmitted to the network; and

an encoding bit rate control step of controlling an encoding bit rate in said encoding step by the detected packet loss.

16. (Withdrawn) A real-time picture information compression-transmission method for compression-transmitting picture information on a plurality of channels in a real time manner, comprising:

an encoding step of encoding said picture information on a preset cycle in a real time manner;

a storage step of writing and storing real-time encoded frame data on said picture information for each frame;

a division step of sequentially dividing said real-time encoded frame data into packets for each frame;

a transmission timing control and transmission step of controlling transmission timing to sequentially transmit the divided packets to a network after a write time for storing said frame data for the packets and before a time for storing next frame data, and of transmitting the packets to the network according to a connection-less type protocol;

a packet loss detection step of detecting packet-loss of the packets transmitted to the network; and

a transmission timing control and adjustment step of adjusting and controlling said transmission timing in said transmission timing control and transmission step for said each channel by the detected packet loss.

17. (Withdrawn) A storage medium stored a control program for allowing a computer to control compression-transmitting picture information in a real time manner, the control program allowing the computer to control:

encoding said picture information on a preset cycle in a real time manner;

writing and storing real-time-encoded frame data on said picture information for each frame;

sequentially dividing said real-time-encoded frame data into packets for each frame; and

controlling transmission timing to sequentially

transmit the divided packets to a network after a write time for storing said frame data for the packets and before a time for storing next frame data, and transmitting the packets to the network according to a connection-less type protocol.

18. (Withdrawn) A storage medium stored a control program for allowing a computer to control compression-transmitting live picture information in a real time manner, the control program allowing the computer to control:

encoding said live picture information on a preset cycle in a real time manner;

writing and storing real-time-encoded frame data on said picture information for each frame;

sequentially dividing said real-time-encoded frame data into packets for each frame;

controlling transmission timing to sequentially transmit the divided packets to a network after a write time for storing said frame data for the packets and before a time for storing next

frame data, and transmitting the packets to the network according to a connection-less type protocol;

detecting packet loss of the packets transmitted to the network; and

controlling an encoding bit rate in said encoding by the detected packet loss.

19. (Withdrawn) A storage medium stored a control program for allowing a computer to control compression-transmitting live picture information on a plurality of channels in a real time manner, the control program allowing the computer to control, with respect to the live picture information on the plurality of channels, for each channel:

encoding said picture information on a preset cycle in a real time manner;

writing and storing real-time encoded frame data on said picture information for each frame;

sequentially dividing said real-time encoded frame data into packets for each frame;

controlling transmission timing to sequentially transmit the divided packets to a network after a write time for storing said frame data for the packets and before a time for storing next frame data, and transmitting the packets to the network according to a connection-less type protocol;

detecting packet loss of the packets transmitted to the network; and

adjusting control of said transmission timing for said each channel by the detected packet loss.

20. (Withdrawn) A picture information decoding apparatus for decoding compressed video data using motion compensation prediction and discrete cosine transform, comprising:

means for converting an inversely-quantized discrete cosine transform coefficient into a smaller base than an encoding-side discrete cosine transform base;

means for performing inverse transform using inverse discrete cosine transform using the smaller base than the encoding-side discrete cosine transform base; and

means for converting picture data subjected to the inverse discrete cosine transform into picture data having a same size as a size of the compressed video data.

21. (Withdrawn) A picture information decoding apparatus according to claim 20, wherein the picture information decoding apparatus decodes only intra coded pictures.

22. (Withdrawn) A picture information decoding apparatus according to claim 20, further comprising:

means for conducting motion compensation prediction to block data having a same size as a size of encoded block data, and for restoring picture block data inversely discrete cosine transformed to have the same block size as the size of said encoded block data, into the video data; and

means for storing the restored video data for said motion compensation prediction.

23. (Withdrawn) A picture information decoding apparatus according to claim 22, wherein the picture information decoding apparatus decodes only intra coded pictures and one-way predictive encoded pictures.

24. (Withdrawn) A picture information decoding apparatus according to claim 22, wherein

the picture information decoding apparatus further

comprises means, connected to means for performing inverse transform using inverse discrete cosine transform using the smaller base than said encoding-side discrete cosine transform base through switching means, for conducting inverse discrete cosine transform with a same block size as a block size of said compressed video data;

the intra coded pictures are decoded by the means for conducting inverse discrete cosine transform to the block data of the same block size as the size of said encoded block data; and

encoded pictures other than the intra coded pictures are subjected to an inverse transform processing using the inverse discrete cosine transform having the smaller base than the encoding-side discrete cosine transform base, and decoded by conducting said motion compensation prediction.

25. (Withdrawn) A picture information decoding apparatus according to claim 20, wherein

said means for converting said inversely-quantized discrete cosine transform coefficient into the smaller base than the encoding-side discrete cosine transform base is scaling means.

26. (Withdrawn) A picture information decoding apparatus for decoding compressed video data using motion compensation prediction and discrete cosine transform, comprising:

means for low-pass filtering an inversely quantized discrete cosine transform coefficient; and

means for inversely transforming the low-pass filtered data using an inverse discrete cosine transform having a base of a same size as a size of an encoding-side discrete cosine transform base, wherein

the inverse discrete cosine transform is to inversely transform a non-zero discrete cosine transform coefficient.

27. (Withdrawn) A picture information decoding apparatus according to claim 26, wherein

the picture information decoding apparatus decodes only intra coded pictures.

28. (Withdrawn) A picture information decoding apparatus according to claim 27, further comprising:

means for conducting motion compensation prediction to block data having a same size as a size of encoded block data, and for restoring the video data; and

means for storing the restored video data for said motion compensation prediction.

29. (Withdrawn) A picture information decoding apparatus according to claim 28, wherein

the picture information decoding apparatus decodes only intra coded pictures and one-way predictive encoded pictures.

30. (Withdrawn) A picture information decoding apparatus according to claim 28, wherein

the picture information decoding apparatus further comprises means, connected to means for inversely transform said low-pass filtered data using inverse discrete cosine transform having a base of a same size as a size of an encoding-side discrete cosine transform base through switching means, for conducting discrete cosine transform to the data of a same block size as a block size of the compressed video data;

the intra coded pictures are decoded by the means for conducting discrete cosine transform to the data of the same block size as the block size of said compressed video data; and

encoded pictures other than the intra coded pictures are decoded by inversely transforming said low-pass filtered data using the inverse discrete cosine transform having the

base of the same size as the size of the encoding-side discrete cosine transform base, and by

conducting said motion compensation prediction.

31. (Withdrawn) A computer readable storage medium stored a program for allowing a

computer to execute:

a step of converting an inversely-quantized discrete cosine transform coefficient into a

smaller base than an encoding-side discrete cosine transform base;

a step of performing inverse transform using inverse discrete cosine transform having the

smaller base than the encoding-side discrete cosine transform base; and

a step of converting picture data subjected to the inverse discrete cosine transform into

picture data having a same size as a size of the compressed video data.

32. (Withdrawn) A computer readable storage medium stored a program for allowing a

computer to execute:

a step of low-pass filtering an inversely-quantized discrete cosine transform coefficient;

and

a step of inversely transforming the low-pass filtered data using a base of a same size as a

size of an encoding-side discrete cosine transform base.

33. (Withdrawn) A computer readable storage medium according to claim 31, wherein

the storage medium further stores a program for a step of conducting motion

compensation prediction to block data having a same size as a size of encoded block data, and of

restoring a video data.

34. (New) A real-time picture information compression-transmission apparatus for

compression transmitting picture information in a real-time manner, comprising:

input means for receiving said picture information;

an encoder encoding frames of said picture information from the input means on a preset

cycle in a real-time manner and outputting real-time-encoded data corresponding to respective

frames of said picture information;

storage means for storing said real-time-encoded data corresponding to the respective

frames of said picture information output from the encoder, the encoder writing the real-time-

encoded data corresponding to the respective frames into the storage means;

division means for receiving the real-time encoded data corresponding to respective

frames from the storage means and sequentially dividing said real-time-encoded data

corresponding to the respective frames into packets; and

transmission timing control and transmission means for controlling transmission timing

to sequentially transmit the packets corresponding to the respective frames to a network, wherein

the transmission timing and control means controls transmission of packets corresponding to

respective frames to the network based on a determination of a time during which the encoder

writes frame data to the storage means and a determination of a time between frames, and for

transmitting the packets to the network according to a connection-less type protocol.